This listing of claims replaces all prior versions and listings of claims in the application.

In the Claims:

1-2. (cancelled)

3. (currently amended) A method as claimed in claim ~~1~~ 5, further comprising forming ~~wherein~~ said surface layer ~~is formed by roughening an exposed surface of~~ having said multiplicity of retrograde profile openings by depositing a polymeric material layer and etching said polymeric material layer with an etchant in presence of an adhesion promoter, said etchant attacking an exposed surface of said polymeric material layer less rapidly than said polymeric material layer below said exposed surface to form said multiplicity of retrograde profile openings.

4. (currently amended) A method as claimed in claim ~~1~~ 5 wherein said polymeric material layer is an anti-reflective coating (ARC).

5. (currently amended) A method of preparing a substrate for photolithographic patterning, comprising:

providing a substrate having at least an exposed rough surface layer including a polymeric material, said surface layer having surface features characterized by feature step height varying between about two percent and twenty percent of the minimum photolithographic half-pitch,

~~A method as claimed in claim 1~~ wherein said surface layer has a multiplicity of openings having a retrograde profile, each of said multiplicity of retrograde profile openings growing larger with increasing depth from an exposed surface of said surface layer; and

depositing a layer of photoresist material in contact with said multiplicity of retrograde profile openings of surface layer such that said layer of photoresist material interlocks with said multiplicity of retrograde profile openings.

6-7. (cancelled)

8. (withdrawn) A method as claimed in claim ~~1~~ 5, further comprising forming ~~wherein~~ said surface layer ~~is formed~~ by processing including simultaneously performing at least one of ion milling and plasma sputtering to a polymeric material layer and ~~, while~~ chemically etching said ~~a layer of said~~ polymeric material layer.

9. (withdrawn) A method as claimed in claim 8 wherein said processing is performed in an ambient including at least one gas selected from fluorides of carbon, sulfur fluoride, and noble gases.

10-12. (cancelled)

13. (currently amended) A method as claimed in claim ~~1~~5, further comprising photolithographically patterning said layer of photoresist material into photoresist patterns,

at least some of which have photolithographic half-pitch of less than about 110 nm and a height-to-width aspect ratio of greater than about two and one half.

14. (withdrawn) A method as claimed in claim ~~1~~5, wherein said surface layer incorporates a multiplicity of nanoparticles providing roughness to said surface layer.

15. (withdrawn) A method as claimed in claim ~~1~~5, wherein said multiplicity of nanoparticles are incorporated while said surface layer is deposited.

16. (withdrawn) A method as claimed in claim 14, wherein said multiplicity of nanoparticles are essentially inert.

17. (withdrawn) A method as claimed in claim 16 wherein said multiplicity of nanoparticles are deposited onto a layer of said polymeric material to provide said surface layer.

18. (withdrawn) A method of providing improved photolithographic patterning having reduced risk of pattern collapse, comprising:

providing a substrate having at least an exposed rough surface layer including a polymeric material having surface features characterized by feature step height varying between about two percent and twenty percent of 110 nm or less, wherein said surface

features include a multiplicity of openings having a retrograde profile, each of said multiplicity of retrograde profile openings growing larger with increasing depth from an exposed surface of said surface layer;

depositing a layer of photoresist material in contact with said retrograde profile openings of ~~over~~ said exposed rough surface layer such that said layer of photoresist material interlocks with said multiplicity of retrograde profile openings;

photolithographically patterning said photoresist material layer into photoresist patterns, wherein at least some of said photoresist patterns have a photolithographic half-pitch of less than about 110 nm and a height-to-width aspect ratio of greater than about two and one half; and

etching a portion of said underlying layer exposed by said photoresist patterns.

19. (currently amended) A method of photolithographically patterning a layer of a substrate, comprising:

providing an exposed rough surface layer over an underlying layer of said substrate, said surface layer including a polymeric material having surface features characterized by a step height varying between about two percent and twenty percent of the minimum photolithographic half-pitch, wherein said surface features include a multiplicity of openings having a retrograde profile, each of said multiplicity of retrograde profile openings growing larger with increasing depth from an exposed surface of said surface layer;

depositing a layer of photoresist material in contact with said multiplicity of retrograde profile openings of ~~over~~ said exposed rough surface layer such that said layer of photoresist material interlocks with said multiplicity of retrograde profile openings;

photolithographically patterning said photoresist material layer into photoresist patterns; and

etching a portion of said underlying layer exposed by said photoresist patterns.

20. (original) A method as claimed in claim 19 wherein at least some of said photoresist patterns have photolithographic half-pitch of less than about 110 nm and a height-to-width aspect ratio greater than about two and one half.

21. (new) A method as claimed in claim 3, wherein said adhesion promoter includes hexamethyldisilazane ("HMDS") and said adhesion promoter acts as a surface inhibitor during said etching of said surface layer.